

CLAIMS

1 1-50. (canceled)

1 51. (currently amended) A lineariser for reducing distortion of an output signal of signal
2 handling equipment, by processing a raw signal with data selected from a store in response to the
3 amplitude and frequency content of the raw signal, wherein the store comprises a group of look-up
4 tables, each table corresponding to a component of the raw signal having a different frequency or band of
5 frequencies, and each table comprising a table of coefficients, each coefficient associated with a value of
6 the amplitude of the component of the table.

1 52-56. (canceled)

1 57. (previously presented) A lineariser according to claim 51, further comprising a divider
2 for dividing the raw signal into a number of components having different frequencies or bands of
3 frequencies.

1 58-61. (canceled)

1 62. (currently amended) A method of reducing distortion of an output signal of signal
2 handling equipment, said method comprising the steps of selecting data from a store in response to the
3 amplitude and frequency content of a raw signal, and using the data in distortion reduction processing of
4 the raw signal, wherein the store comprises a group of look-up tables, each table corresponding to a
5 component of the raw signal having a different frequency or band of frequencies, and each table
6 comprising a table of coefficients, each coefficient associated with a value of the amplitude of the
7 component of the table.

1 63-67. (canceled)

1 68. (previously presented) A method according to claim 62, further comprising the step of
2 dividing the raw signal into a number of components having different frequencies or bands of
3 frequencies.

1 69-72. (canceled)

1 73. (currently amended) A method for reducing distortion in an output signal generated by
2 signal handling equipment, the method comprising:

- 3 (a) dividing a raw signal into a plurality of raw components, each raw component having an
4 amplitude and each raw component corresponding to a different frequency or band of frequencies;
- 5 (b) generating a modified component for each raw component based on the amplitude of the
6 raw component by retrieving, for each raw component, a value for the corresponding modified
7 component from a look-up table (LUT) based on the amplitude of the raw component, wherein each
8 different frequency or band of frequencies has its own LUT; and
- 9 (c) combining the plurality of modified components to generate a modified signal.

1 74. (previously presented) The invention of claim 73, wherein:

2 the signal handling equipment is an amplifier adapted to amplify the modified signal; and

3 the modified signal is generated by applying pre-distortion to the raw signal, wherein the pre-
4 distortion reduces the distortion in the output signal generated by the amplifier.

1 75. (previously presented) The invention of claim 73, wherein:
2 step (a) comprises applying different copies of the raw signal to a plurality of band-pass filters to
3 generate the plurality of raw components, each band-pass filter corresponding to a different frequency or
4 band of frequencies; and
5 step (c) comprises summing the plurality of modified components to generate the modified
6 signal.

1 76. (previously presented) The invention of claim 73, wherein:
2 step (a) comprises transforming the raw signal from a time domain to a frequency domain to
3 generate the plurality of raw components; and
4 step (c) comprises transforming the plurality of modified components from the frequency
5 domain to the time domain to generate the modified signal.

1 77. (canceled)

1 78. (currently amended) The invention of claim [[77]] 73, further comprising (d) adaptively
2 updating values stored in each LUT.

1 79. (previously presented) The invention of claim 78, wherein step (d) comprises:
2 (1) generating a feedback signal based on the output signal of the signal handling
3 equipment;
4 (2) dividing the feedback signal into a plurality of feedback components, each feedback
5 component corresponding to a different frequency or band of frequencies;
6 (3) generating, for each frequency or band of frequencies, an update value for the
7 corresponding LUT based on the corresponding raw component and the corresponding feedback
8 component; and
9 (4) updating each LUT based on the corresponding update value.

1 80. (previously presented) The invention of claim 79, wherein step (d)(3) comprises
2 applying the corresponding raw component and the corresponding feedback component to a divider to
3 generate the corresponding update value.

1 81. (previously presented) The invention of claim 80, wherein step (d)(3) further comprises
2 integrating, over time, outputs from the divider to generate the corresponding update value.

1 82. (previously presented) An apparatus for reducing distortion in an output signal
2 generated by signal handling equipment, the apparatus comprising:
3 (a) means for dividing a raw signal into a plurality of raw components, each raw component
4 having an amplitude and each raw component corresponding to a different frequency or band of
5 frequencies;
6 (b) means for generating a modified component for each raw component based on the
7 amplitude of the raw component, wherein:
8 means (b) comprises a plurality of LUTs;
9 each LUT corresponds to a different frequency or band of frequencies; and
10 each LUT is adapted to provide, for the corresponding raw component, a value for the
11 corresponding modified component based on the amplitude of the raw component; and
12 (c) means for combining the plurality of modified components to generate a modified
13 signal.

1 83. (previously presented) The invention of claim 82, wherein:

2 the signal handling equipment is an amplifier adapted to amplify the modified signal; and
3 the modified signal is generated by applying pre-distortion to the raw signal, wherein the pre-
4 distortion reduces the distortion in the output signal generated by the amplifier.

1 84. (previously presented) The invention of claim 82, wherein:
2 means (a) comprises a plurality of band-pass filters connected to receive different copies of the
3 raw signal and adapted to generate the plurality of raw components, each band-pass filter corresponding
4 to a different frequency or band of frequencies; and
5 means (c) comprises a combiner adapted to sum the plurality of modified components to
6 generate the modified signal.

1 85. (previously presented) The invention of claim 82, wherein:
2 means (a) comprises a transform adapted to transform the raw signal from a time domain to a
3 frequency domain to generate the plurality of raw components; and
4 means (c) comprises an inverse transform adapted to transform the plurality of modified
5 components from the frequency domain to the time domain to generate the modified signal.

1 86. (canceled)

1 87. (currently amended) The invention of claim [[86]] 82, further comprising (d) means for
2 adaptively updating values stored in each LUT.

1 88. (previously presented) The invention of claim 87, wherein means (d) comprises:
2 (1) means for generating a feedback signal based on the output signal of the signal handling
3 equipment;
4 (2) means for dividing the feedback signal into a plurality of feedback components, each
5 feedback component corresponding to a different frequency or band of frequencies;
6 (3) a feedback and control mechanism adapted to generate, for each frequency or band of
7 frequencies, an update value for the corresponding LUT based on the corresponding raw component and
8 the corresponding feedback component; and
9 (4) means for updating each LUT based on the corresponding update value.

1 89. (previously presented) The invention of claim 88, wherein the feedback and control
2 mechanism comprises a divider adapted to receive the corresponding raw component and the
3 corresponding feedback component to generate the corresponding update value.

1 90. (previously presented) The invention of claim 89, wherein the feedback and control
2 mechanism further comprises an integrator adapted to integrate, over time, outputs from the divider to
3 generate the corresponding update value.